1773

GEOCHEMICAL AND GEOPHYSICAL REPORT

ON

DEEP CLAIMS 1 TO 10
DEN FRACTIONS 1 AND 2

KENNEDY MOUNTAIN AREA, SIMILKAMEEN M.D., B.C.

PRINCETON SHEET 92H ($E\frac{1}{2}$)

49°N., 120°W., S.W.

BY

J. McCUE, PROFESSIONAL ENGINEER

NEWMONT MINING CORPORATION OF CANADA LIMITED

DEEP GULCH GROUP

CLAIMS HELD BY:

DEEP 1-10	J.A. HOWARD 2914 Altamont Cresc. West Vancouver, B.C.
DEN FR. 1 & 2	SIMILKAMEEN MINING CO. LTD. Box 520 Princeton, B.C.

Work performed September 1 to October 31, 1968.

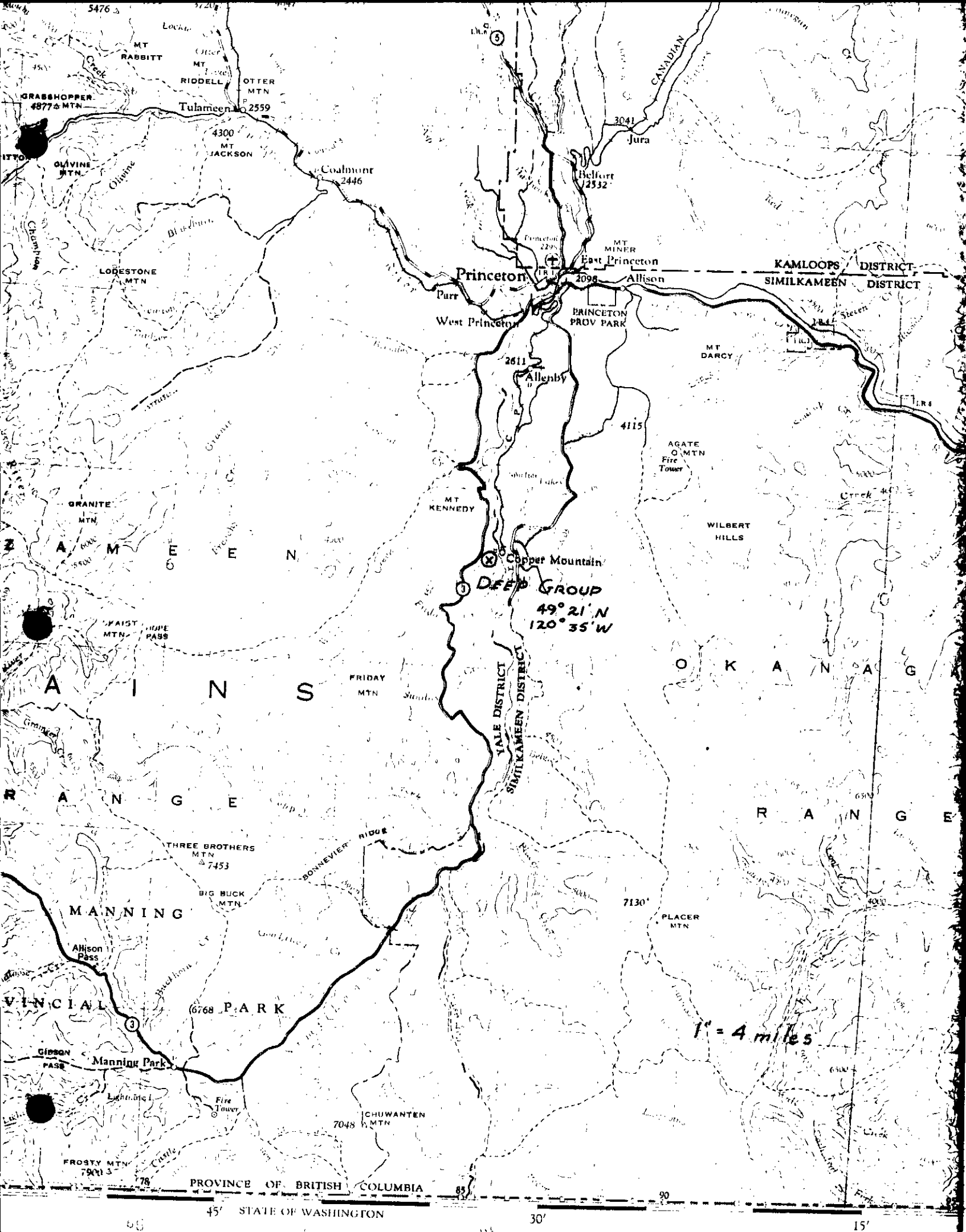

Princeton
Tulameen
Coalmont
Allenby
West Princeton
East Princeton
Allison
Jura
Belfort
Copper Mountain
DEEP GROUP
49° 21' N
120° 35' W
1" = 4 miles
KAMLOOPS DISTRICT
SIMILKAMEEN DISTRICT
YALE DISTRICT
SIMILKAMEEN DISTRICT
PRINCETON PROV PARK
Manning Park
Allison Pass
Gibson Pass
PROVINCE OF BRITISH COLUMBIA
STATE OF WASHINGTON
CANADIAN
MT RABBITT
RIDDELL
OTTER MTN
GRASSHOPPER MTN
MT JACKSON
OLIVINE MTN
LODESTONE MTN
MT MINER
PURR
MT DARCY
AGATE MTN
MT KENNEDY
GRANITE MTN
WILBERT HILLS
FRIDAY MTN
THREE BROTHERS MTN
BONNEVIER RIDGE
BIG BUCK MTN
PLACER MTN
CHUWANTEN MTN
FROSTY MTN
Fire Tower
Z A M E E N
A I N S
R A N G E
O K A N A G
MANNING
PARK

TABLE OF CONTENTS

DEEP GULCH GROUP OF MINERAL CLAIMS

SIMILKAMEEN M.D., B.C.

GEOCHEMICAL AND GEOPHYSICAL REPORT

BY

J. McCUE, P. ENG.

INTRODUCTION

During the period from September 1st to October 31st, 1968, a program of line cutting, geochemical and geophysical surveys were carried out on the Deep Gulch Group of claims to determine the presence of copper mineralization within that portion of the central area of the Copper Mountain stock covered by the claims. This program was under the overall supervision of the writer.

CONCLUSIONS

The geochemical survey indicates two sub-parallel geochemically anomalous zones that are roughly perpendicular to the observed structural and lithological features implying an undetermined structural mineralogical control.

The geophysical survey did not locate any apparent anomalous condition, the results suggesting the possible presence of only a fraction of one percent sulphides.

LOCATION AND ACCESS

The property is located about 12 miles south of Princeton on the Hope-Princeton highway which crosses the northwest edge of the Deep 1 claim. The claims extend southerly to the Similkameen River. See frontispiece.

PROPERTY

The Deep Gulch Group consists of 12 contiguous claims which in turn are contiguous with the Similkameen-Ingerbelle property. Details of the claims are as follows:

DEEP GULCH GROUP

Claim	Record No.	Tag No.	Anniversary Date
Deep 1	19630	733391	19 March 1969
Deep 2	19631	733392	19 March 1969
Deep 3	19632	733393	19 March 1969
Deep 4	19633	733394	19 March 1969
Deep 5	19634	733395	19 March 1969
Deep 6	19635	733396	19 March 1969
Deep 7	19636	733397	19 March 1969
Deep 8	19637	733398	19 March 1969
Deep 9	19638	733399	19 March 1969
Deep 10	19639	733400	19 March 1969

These claims are owned by Mr. J.A. Howard, 2914 Altamont Crescent, West Vancouver, B.C. and are under option to Similkameen Mining Company Limited.

plus

Den Fractions

Claim	Record No.	Tag No.	Anniversary Date
Den 1 Fr.	22987	733119	25 July 1969
Den 2 Fr.	22988	733118	25 July 1969

These claims are owned by Similkameen Mining Company Limited.

SURVEY EXPENDITURES

Incurred during the period from September 1st, 1968 to October 31, 1968.

Linecutting

T. Coyne	86 Hours	Linecutter	212.24
L. Coyne	104 Hours	Linecutter	256.88
R. Lawes	15 Hours	Linecutter	37.05
G. Taylor	52 Hours	Linecutter	128.44
R. Lockhart	68 Hours	Linecutter	167.96
W. McCrae	56 Hours	Linecutter	154.00
I. Eljarbo	24 Hours	Survey Helper	75.60
J. Bolton	24 Hours	Surveyor	100.00
			1,132.16

Geochemistry

S. Visser	Sampler	10 days @ $ 25.00	250.00	
H. Ewan	Sampler	10 days @ $ 25.00	250.00	
Geochemical analysis	- 368 samples @ 0.95 ¢		349.60	
				849.60

Geophysics

Seigel Associates Ltd. - Contract	3,161.40

Maps

H. Day 3 days @ $25.00	75.00
Total Expenditure	5,218.16

$4800.00 of the above expenditures is to be applied as assessment work for four years on each of the twelve claims of the Deep Group.

LINECUTTING

The line cutting consisted of 7,400 feet of base line run with transit and chain, and 35,500 feet of cross lines turned off the base line with transit, and run by means of alignment pickets. Base lines were generally 2000 feet apart, cross lines 400 feet apart except in the northern section where 200 foot spacing was used in part. Lines are indicated on the accompanying maps showing the geochemical and geophysical readings.

GEOLOGY

The claim area is near the central portion of the Copper Mountain stock. An easterly trending gradational contact intersects the Deep 3, Deep 2, and Deep 4 claims with medium to coarse grained monzonite to the north and course grained syenite-perthosite pegmatite to the south representing a portion of the central core of the Copper Mountain stock. The only observed structural feature is a series of wide-spaced W.S.W. trending vertical jointing. Rare traces of chalcopyrite and oxide coppers were seen. Generalized geological mapping was done from the picket lines, establishing the contact as shown on the geochemical data map,

GEOCHEMICAL REPORT

This portion of the report is based on extracts of a study and interpretation of the results made by Dr. J.A. Coope, Ph.D., Chief Geologist for Newmont Mining Corporation of Canada Limited

Locality Features

The Similkameen River flows through a deep and impressive canyon in the Copper Mountain area. The claims cover part of the steep eastern slope of this canyon between elevation of 2500 feet and 3700 feet above sea level. A few steep rocky bluffs border the river but on the claims the steep slopes are characterized by a fairly continuous overburden and forest cover. A tributary stream follows a well incised valley feature crossing the northern part of the claims to enter the Similkameen River approximately 1000 feet north-northeast of the Deep 2. claim.

The soil-overburden cover is strongly influenced by gravitational forces. Weathering products on the steep slopes are unstable and there is a continuous movement of soil and weathered rock material towards the river. This movement is regulated by the degree of slope and the density of the vegetation growth.

In areas where recent erosion has not been intense, isolated patches of fluvial material are still preserved on the valley sides. These deposits were formed in glacial and post glacial times during the development of the Similkameen canyon.

The typical soil type development is the podzol. However, in unstable areas the soil horizons characteristic of this soil type are poorly developed. The leached A_2 horizon is recognizable in places over the claims, but the soils are essentially juvenile and partially transported. The proportion of outcrop is approximately 10 percent. The forest cover consists of the conifers, fir, spruce, balsam, jackpine, and ponderosa pine. Underbrush is generally sparse.

Geochemical Survey

368 Samples were collected at 100 foot intervals along 400 foot and/or 200 foot spaced picket lines.

The B horizon of the soil was sampled wherever developed. The majority of the samples, however, consisted of juvenile, rubbly material derived from suboutcropping bedrock lying immediately upslope. The samples were collected at depths between 2 and 12 inches using a stainless steel garden trowel.

All the samples were analysed for copper in the Newmont Mobile geochemical laboratory located in Port McNeill, B.C. The dried sample material was loosely agitated in a porcelain pestle and mortar to break up the soil structure and then sieved through a non-contaminating 80 mesh sieve. The minus 80 mesh material was retained for analysis and the oversize discarded.

200 mg. of the minus 80 mesh material was carefully weighed and treated with perchloric acid on a hot plate for approximately three hours. At the end of this period the sample material was grey or white indicating complete reaction. The perchloric acid solution was diluted to volume with water and analyzed using a Techkan AA-4 atomic absorption spectrophotometer.

The sample locations, and copper content of the samples in parts per million are shown on Map No. 1.

Geochemical Results and Interpretations

The copper content of the soil samples ranges from less than 10 p.p.m. Cu. to over 200 p.p.m. Cu. A statistical examination of the analytical data has indicated three distinct populations. The majority of results were less than 50 p.p.m. Cu. and this value is interpreted as the upper limit of the background range for the area. A smaller population is conveniently defined by values of 51 p.p.m. to 75 p.p.m. Approximately 10% of the samples contain copper in excess of 75 p.p.m. and these are considered to be anomalous.

Generally speaking, two anomalous zones have been indicated by the survey. These zones parallel each other and extend

a.) Northeasterly across Deep claims 9,7,8, and 6.

b.) Northeasterly across Deep claims 3,4, and 2.

Some of the anomalous samples contained in the southeasterly zone are associated with outcrops, but not all the outcrops of pegmatite had associated copper values and it is reasonable to conclude that certain sections within the pegmatite unit are enriched in copper.

Copper mineralization is known to occur in trenches west of Deep claims 3 and 5. The anomalous results detected on the lines on claims 4 and 2 apparently indicate a northwesterly extension of this copper enriched zone across the Deep claims. The fact that this geochemically anomalous zone extends across a well defined geological boundary indicates that copper enrichment is not restricted to one rock type and is in fact controlled by geological features other than lithology.

Transported fluvial deposits do occur in the area and incorporation of these materials in the soil samples will result in dilution of geochemical values in areas of geochemically anomalous bedrock. The fluvial deposits are not so extensive as to obliterate completely geochemically anomalous zones compatable with those described.

Conclusion

A geochemical soil survey of the Deep Gulch Group of claims has indicated two broad anomalous zones of copper value.

These anomalous zones are sub-parallel and in one instance extends across geological boundaries. These relationships suggest that the controls of the copper enrichment in the bedrock are not lithological but possibly structural.

GEOPHYSICAL REPORT

This portion of the report is based on the geophysical survey work done by Seigel Associates Limited and on a study and interpretation by W.M. Dolan, M.Sc., Chief Geophysicist for Newmont Mining Corporation of Canada Limited.

Method

The induced polarization survey was done by the gradient array procedure with a current electrode separation of 6000 feet and a potential electrode separation of 200 feet. 2000 foot square blocks were used as the basis of the electrode separations. Current electrodes were set out at 3000 feet north and south of the centre point of each block and readings taken every 100 feet along the cross lines.

The steep topography rendered laying out of current lines difficult and caused delays when animals or vehicles broke the current wires. Readings were made at a total of 353 points on the grid.

Seigel Mk VI remote induced polarization (Newmont type) receivers were used for this survey along with 10 kw generating and control units. A detailed description of this equipment is given on the accompanying specification sheet.

Maps

Map No. 2 is a plot of the chargeability values shown in milliseconds for each station and 5.0 millisecond contours.

Map No. 3 is a plot of the resistivity values in ohm-metres for each station and 100 ohm-metre contours.

Conclusions

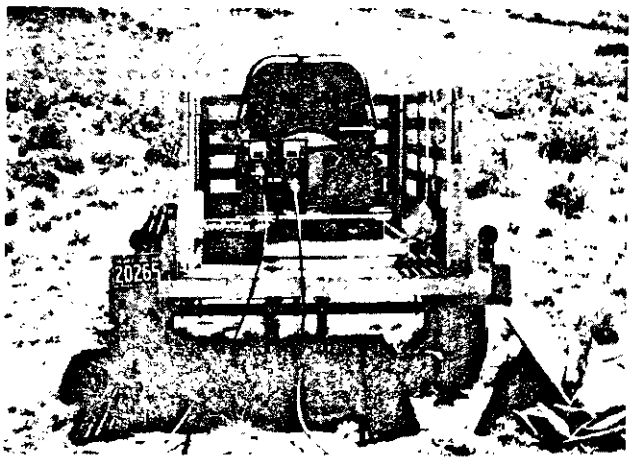
A background chargeability of 5 to 7 milliseconds is found to prevail over the whole surveyed area with no detectable anomalous conditions. There is no electrical evidence for any type of economic ore deposit.

As the geophysical method would certainly have detected the two percent copper sulphides necessary for an ore zone the anomalous copper values of the geochemical survey could well represent close to the assay value of the rock especially as much of the anomalous sample material consisted of the surface disintegration of the underlying bedrock.

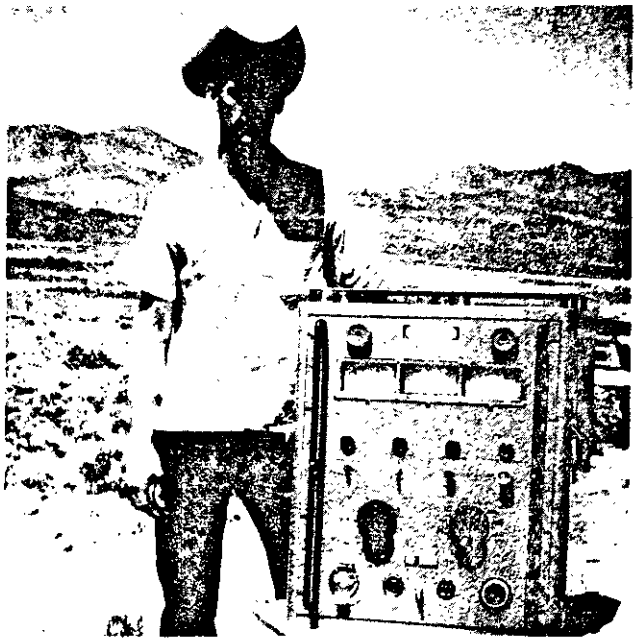
J. McCue, P. Eng.
27 February, 1969

SCINTREX LIMITED

SHARPE INDUCED POLARIZATION UNIT — MARK VI



MOTOR GENERATOR



10KW CONTROL UNIT

LIGHTWEIGHT PORTABLE NEWMONT TYPE RECEIVER

MOTOR GENERATORS

1. **10KW** — single phase, 208V., A.C., 400 c.p.s. alternator. 4 cycle, 4 cylinder, 36 h.p. SAE gasoline motor. 500 lbs.
2. **2½KW** — single phase, 110V., A.C., 400 c.p.s. alternator. 4 cycle, 1 cylinder, 6 h.p. SAE gasoline motor.
   Dimensions ~~15" x 18" x 14½"~~ 26" x 20" x 19" Weight ~~62½ lbs.~~ 130 lbs.

CONTROL UNITS

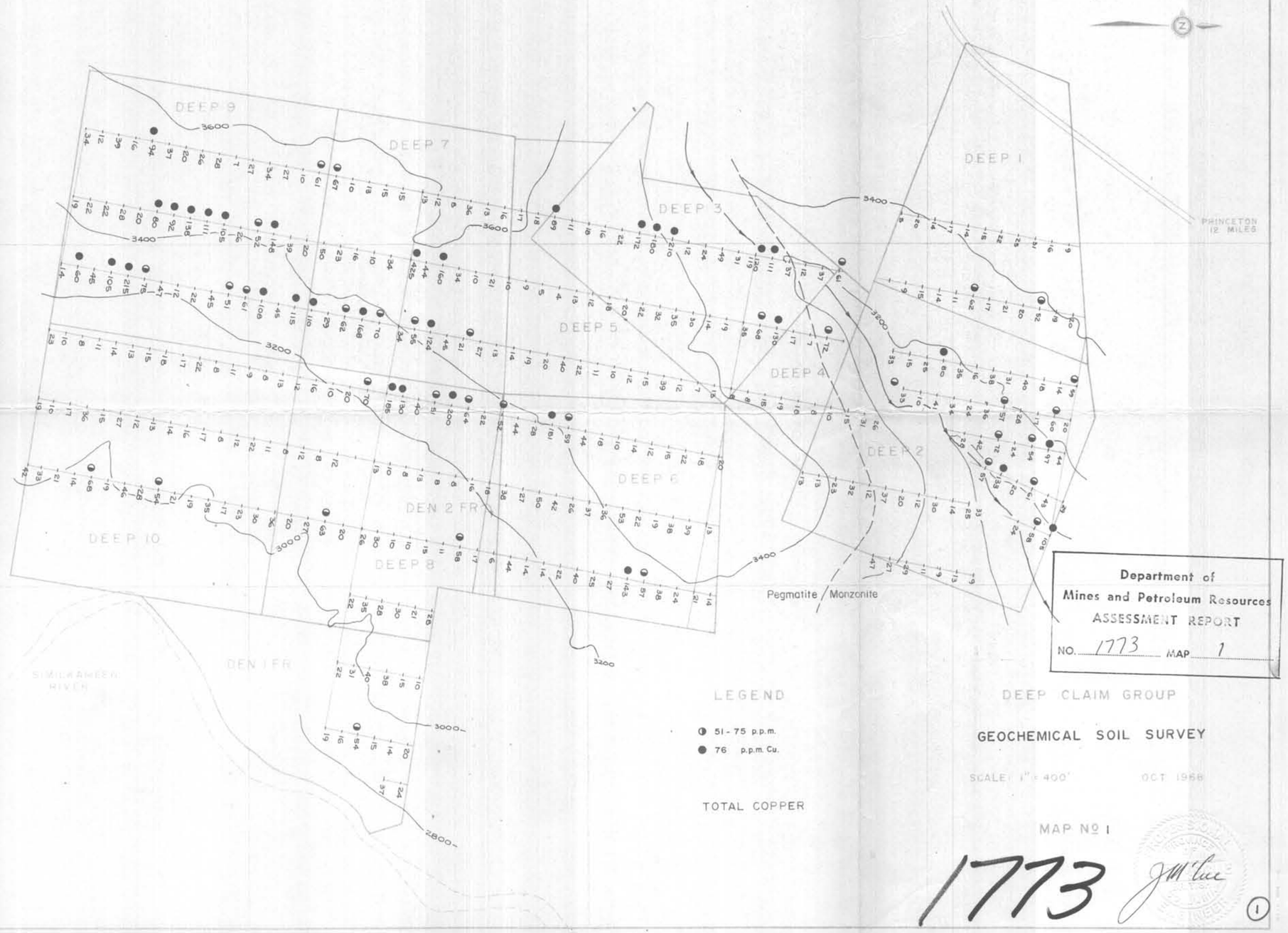
1. **10KW**—5,000V and 5 Amperes D.C. maximum. Transmitting cycle - 2 seconds on, 2 seconds off, reversed 2 seconds on, 2 seconds off and repeated.
   Dimensions 21¼" x 16¼" x 24¾" Weight 200 lbs.
2. **2½KW** — 1,500V and 3 Amperes D.C. maximum. Transmitting cycle (1) as above.
   Dimension ~~26" x 20" x 19"~~ 15" x 18" x 14½" Weight ~~120 lbs.~~ 62½ lbs.

DUMMY LOAD

10KW maximum. Dimensions 10" x 10" x 20" Weight 75 lbs.
(For the 2½KW unit the dummy load is mounted in the control unit cover.)

MEASURING UNIT

Newmont type receiver.
Primary voltage range — 300 microvolts to 30V. Accuracy ±3%.
Input impedance 300 K ohms.
Time reference signal is remotely obtained from the received primary signal to give coherent detection.
Chargeability (M) Reading Range 0 - 100 and 0 - 300 milliseconds. Accuracy ± 5%.
Curve Factor (L) Reading Range 0 - 100 and 0 - 300 milliseconds. Accuracy ± 5%.
Variable delay time before integration of 0.2 seconds and 0.45 seconds.
SP and VLF Noise Compensation. Manual ± 1.5 millivolts.
Automatic 1 mV range ± 10 mV total 30 mV range ± 1 V total
Automatic SP corrections are applied during each reading period using a memory circuit.
power supply —
+12V 20 MA and —12V 10 MA. Rechargeable nickel cadmium batteries. Rated life 45 hrs./charge.
temperature range — —20° to 130°F.
13½ lbs. including batteries. 14" x 11" x 6½"



LEGEND

◑ 51 - 75 p.p.m.

● 76 p.p.m. Cu.

TOTAL COPPER

DEEP CLAIM GROUP

GEOCHEMICAL SOIL SURVEY

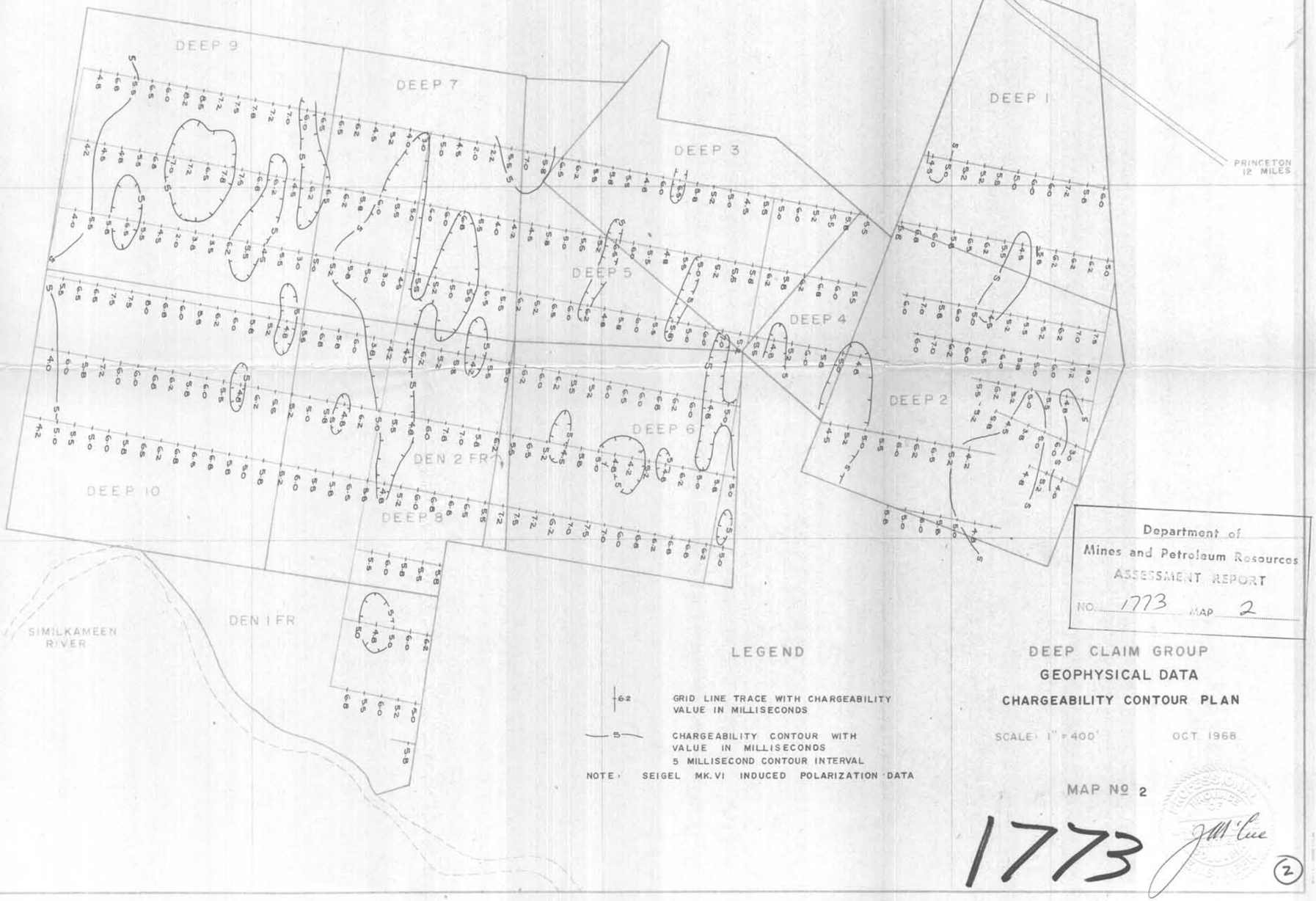
SCALE: 1" = 400' OCT 1968

MAP Nº 1

1773

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 1773 MAP 1

(1)



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 1773 MAP 2

LEGEND

62 — GRID LINE TRACE WITH CHARGEABILITY VALUE IN MILLISECONDS

5 — CHARGEABILITY CONTOUR WITH VALUE IN MILLISECONDS
5 MILLISECOND CONTOUR INTERVAL

NOTE: SEIGEL MK. VI INDUCED POLARIZATION DATA

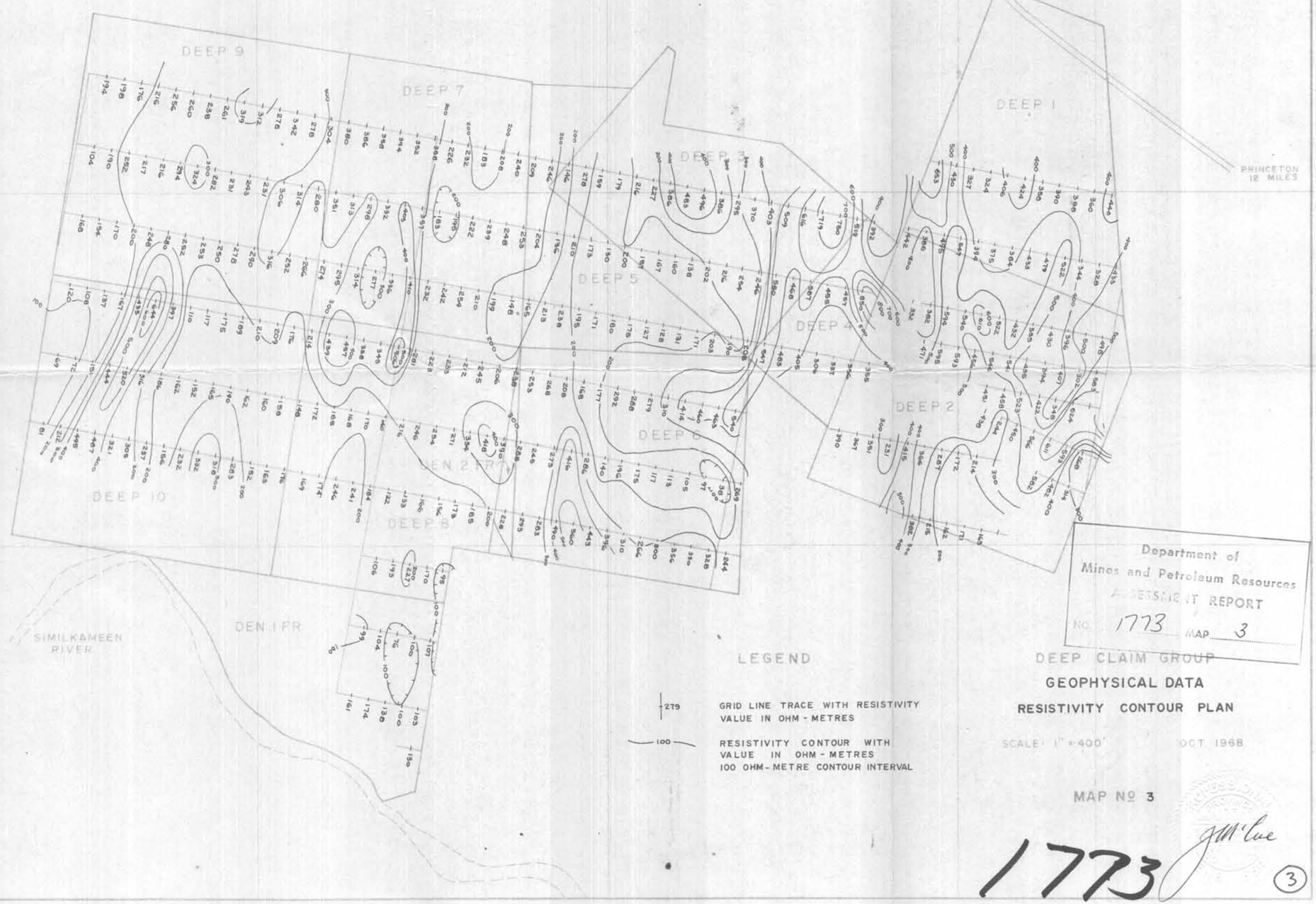
DEEP CLAIM GROUP
GEOPHYSICAL DATA
CHARGEABILITY CONTOUR PLAN

SCALE: 1" = 400' OCT. 1968

MAP Nº 2

1773

(2)



LEGEND

279 GRID LINE TRACE WITH RESISTIVITY VALUE IN OHM - METRES

100 RESISTIVITY CONTOUR WITH VALUE IN OHM - METRES
100 OHM - METRE CONTOUR INTERVAL

DEEP CLAIM GROUP

GEOPHYSICAL DATA

RESISTIVITY CONTOUR PLAN

SCALE: 1" = 400' OCT. 1968

MAP Nº 3

1773 (3)